

# Service Manual

Radio

FM/AM/FM STEREO RADIO with  
FEATHERWEIGHT STEREO HEADPHONES

RF-433/©



## ■ SPECIFICATIONS

Frequency Range: FM88~108MHz  
AM525~1610kHz

Intermediate Frequency: FM10.7MHz  
AM455kHz

Sensitivity: FM1.8  $\mu$ V  
(-3dB, Limit. Sens.)

Power Output: 60mW (30mW  $\times$ 2) Maximum  
Batteries: 3V(Two "AAA" Size Penlight Batteries)

(Panasonic UM-4 or equivalent)

Dimensions:

70(Wide)  $\times$  118(High)  $\times$  26(Deep)mm  
(2- $\frac{25}{32}$ "  $\times$  4- $\frac{21}{32}$ "  $\times$  1- $\frac{1}{32}$ ")

Weight:

120g (4.2 oz) Without Batteries  
Headphone Jack ..... 32  $\Omega$  ( $\phi$ 3.5)

Impedance:

### • Featherweight Stereo Headphones

Input: 10mW (Max. 50mW)

Impedance: 24  $\Omega$

Connection Cord: 90cm (35- $\frac{7}{16}$ ")

Weight: 52g (1.8 oz.) with cord

Weights and dimensions shown are approximate.

(Les poids et dimensions mentionnés sont approximatifs).

Specifications are subject to change without notice.

# Panasonic®

Matsushita Engineering and  
Service Company  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

Panasonic Hawaii Inc.  
91-238 Kaahi St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave. 65 De Infanteria, KM 9.7  
Victoria Industrial Park,  
Carolina, Puerto Rico 00630

Matsushita Electric  
of Canada Limited  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

## DISASSEMBLY INSTRUCTIONS

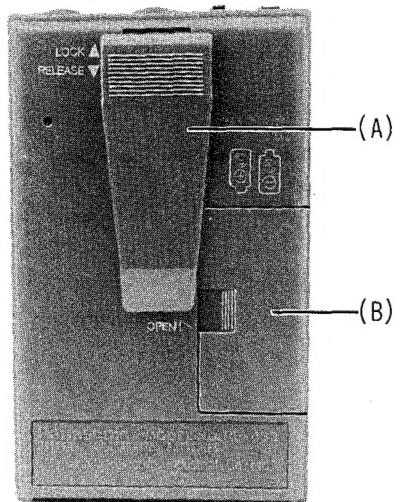


Fig. 1

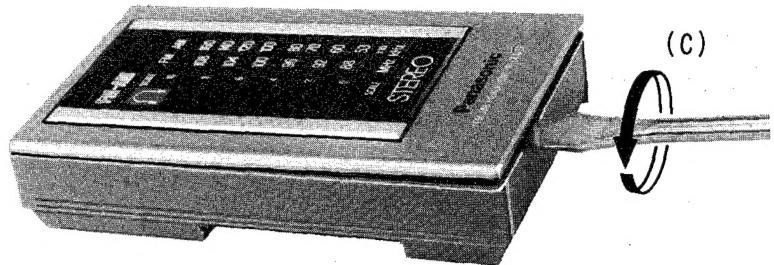


Fig. 2

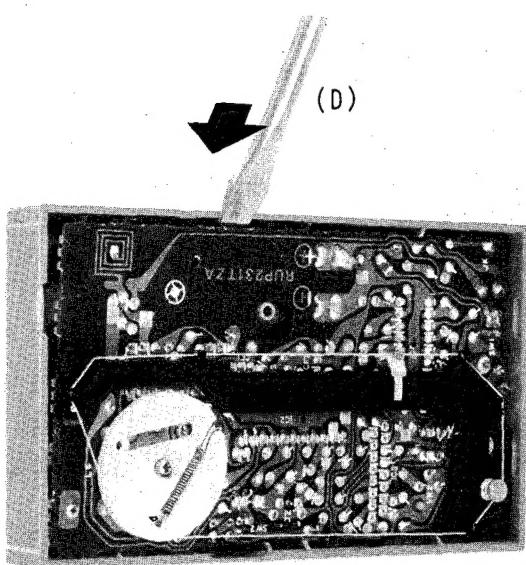


Fig. 3

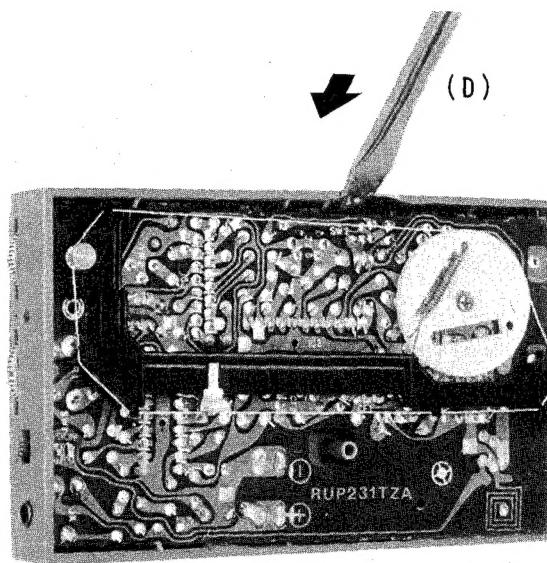


Fig. 4

Procedure	To remove—	Remove—	Shown in Fig—
1	Front Cabinet	Clip..... (A)×1	1
2		Battery Cover..... (B)×1	1
3		Front Cabinet..... (C)×1	2
4	Chassis	PC. Bord .....(D)×2	3, 4

## MEASUREMENTS AND ADJUSTMENTS

## ■ ALIGNMENT INSTRUCTIONS

## READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

## Notes:

1. Set volume control to maximum.  
2. Set band switch to AM or FMST.  
3. Set power switch to ON.  
4. Set power source voltage to 3 volts DC.  
5. Output of signal generator should be no higher than necessary to obtain an output reading.

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING (DISTANCE)	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
CONNECTIONS		FREQUENCY			
AM-IF & RF ALIGNMENT					
(1)	Fashion loop or several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T3 (AM 1st IFT) Adjust for maximum output.
(2)	"	511 kHz	Tuning capacitor fully closed.	"	L5 (AM OSC Coil)
(3)	"	1650 kHz	Tuning capacitor fully open.	"	CT3 (AM OSC Trimmer)
(4)	"	550 kHz	Tune to signal.	"	(*1)L6 (AM ANT Coil) Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	"	1500 kHz	Tune to signal.	"	CT4 (AM ANT Trimmer) Adjust for maximum output. Repeat steps (2)~(5)
(*1) Cement antenna bobbin with wax after completing alignment.					
FM-IF ALIGNMENT					
(6)	High side thru. 0.001 $\mu$ F to point ▲ Negative side to point ▽	10.7 MHz	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point ▲, Negative side to point ▽	T1 (FM 1st IFT) Adjust for maximum amplitude. (Refer to fig. 5).
(7)	"	"	"	"	T2 (FM 2nd IFT) Adjust for maximum amplitude. (Refer to fig. 6).
FM-RF ALIGNMENT					
(8)	Connect point ▲ through FM dummy antenna Negative side to point ▽ (Refer to fig. 7.)	86.2 MHz	Tuning capacitor fully closed.	Output meter across voice coil.	L4 (FM OSC Coil) (*2) Adjust for maximum output.
(9)	"	109.3 MHz	Tuning capacitor fully open.	"	CT2 (FM OSC Trimmer)
(10)	"	90 MHz	Tune to signal.	"	L3 (FM ANT Coil)
(11)	"	106 MHz	Tune to signal.	"	CT1 (FM ANT Trimmer) Adjust for maximum output. Repeat steps (8)~(11).
(*2) Three output responses will be present; proper tuning is the center frequency.					

## ■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	90 MHz, 60 dB	▲-(+)-side ▽-(-)-side	VR <sub>2</sub>	19 kHz	Adjust VR <sub>2</sub> for 19 kHz ( $\pm 150$ Hz) reading on electronics counter.

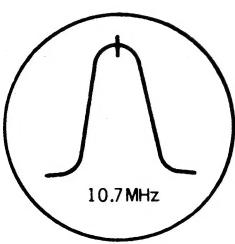


Fig. 5

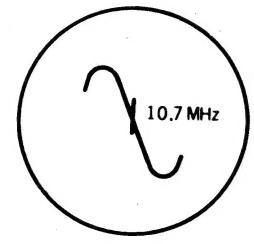


Fig. 6

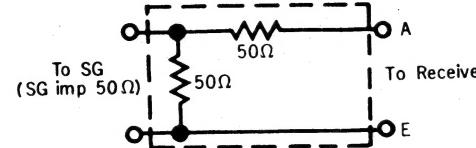


Fig. 7

## ■ ALIGNMENT POINTS

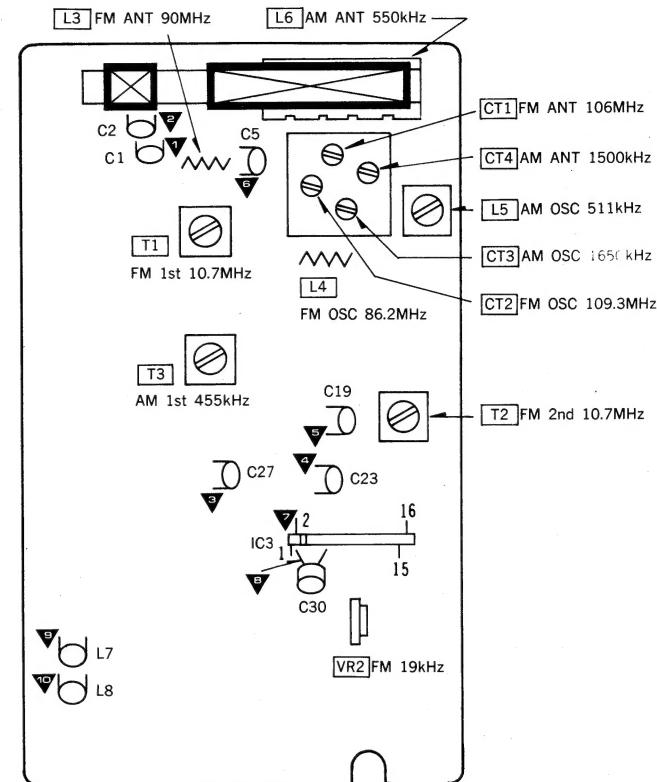


Fig. 8

## DIAL THREADING

DIAL CORD LENGTH: 20.1cm (7-59/64")

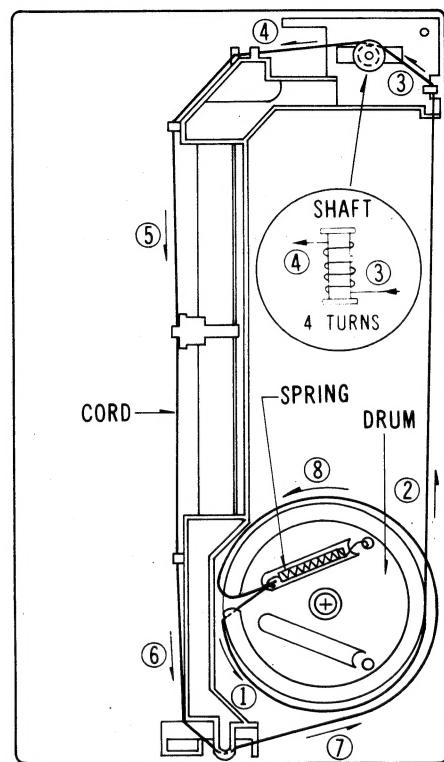


Fig. 9

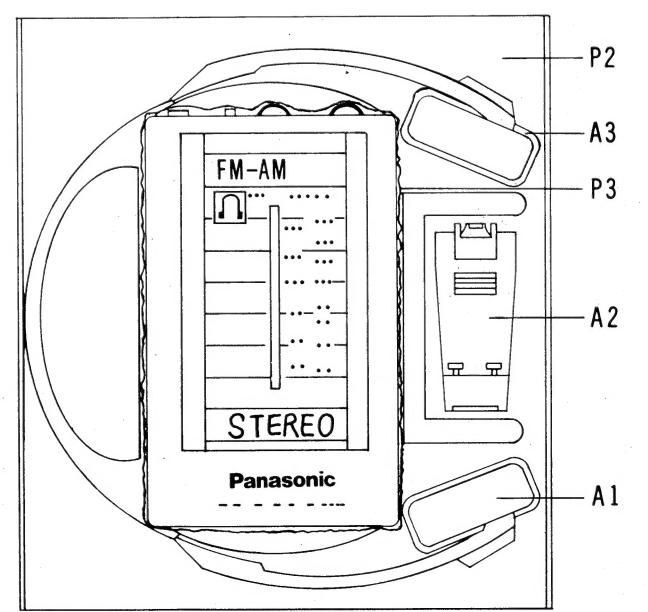
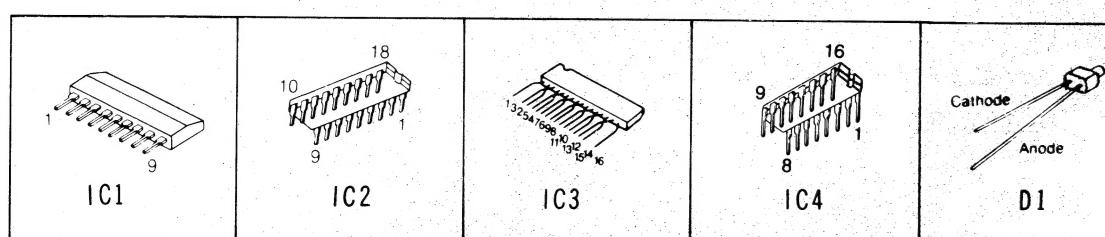
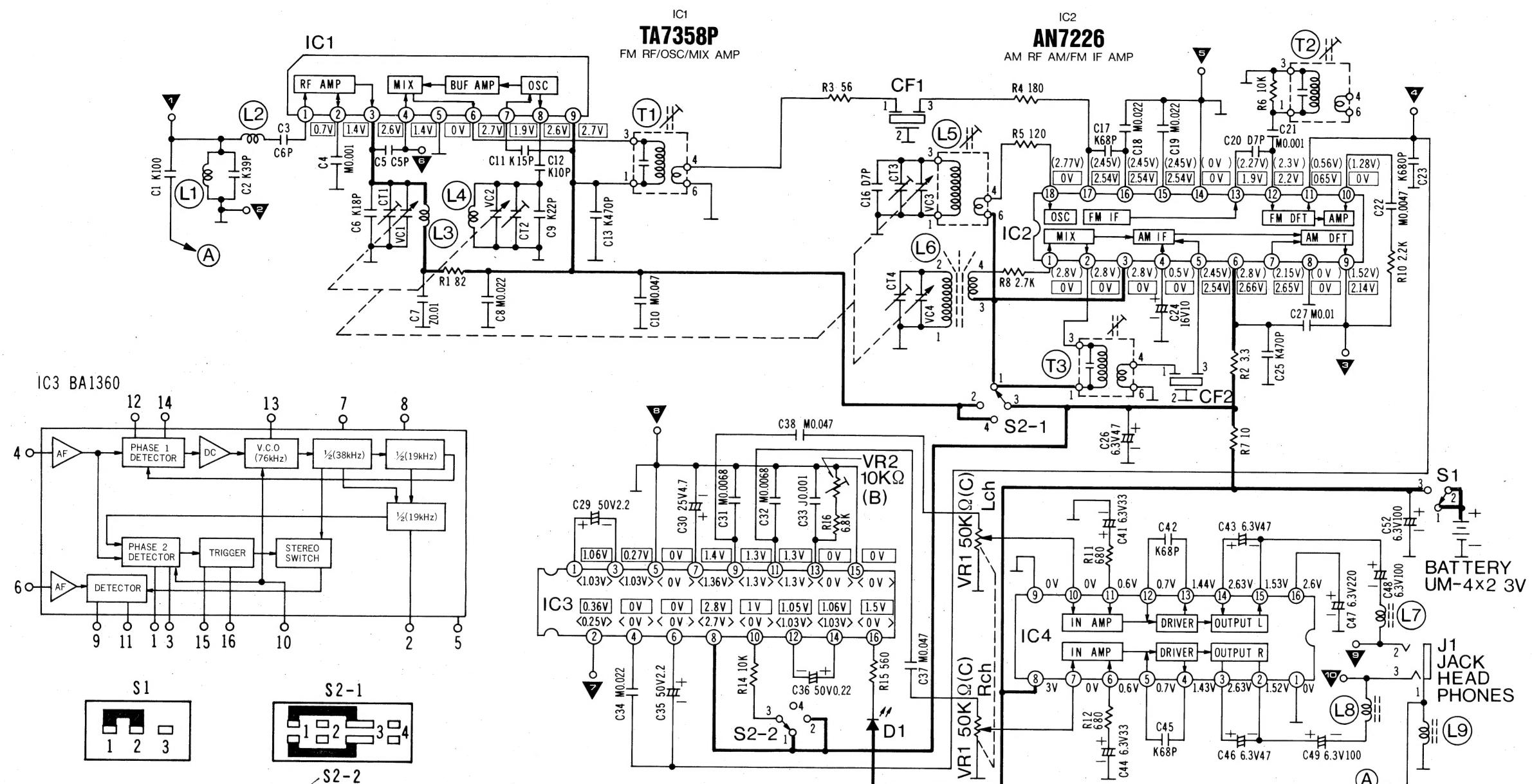


Fig. 10

## SCHEMATIC DIAGRAM MODEL RF-433/©

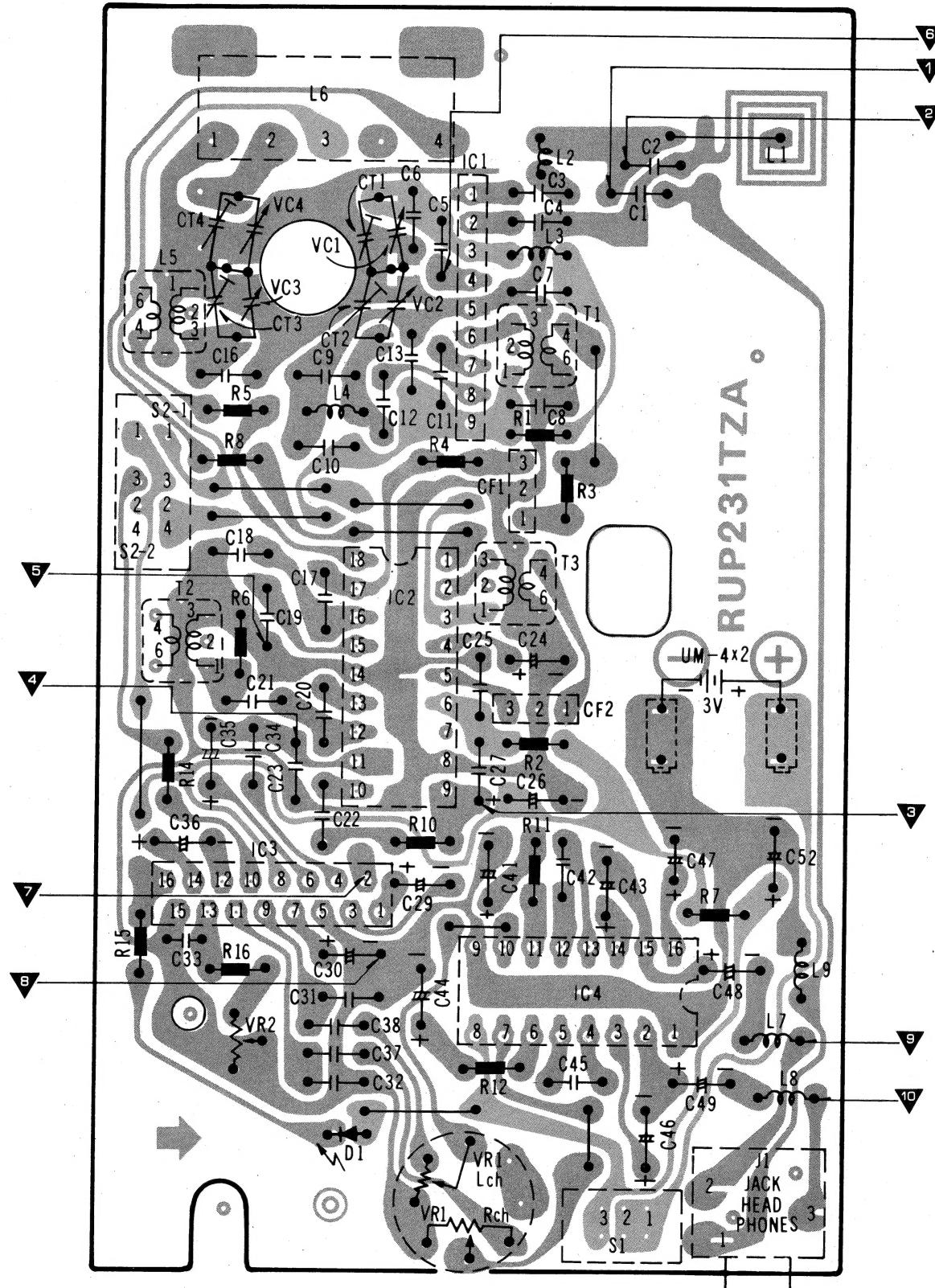


## Notes:

1. S1: Power switch in "OFF" position.
2. S2-1~2-2: Band switch in "AM" position.  
(1-AM, 2-FM, 3-FM ST.)
3. DC Voltage measurements are taken with electronic voltmeter based on negative terminal of Battery.  
□-FM position, ( )-AM position.  
<>-FM ST. position

4. Battery Current no signal ..... 10mA  
Maximum output ..... 30mA
5. VR1 ..... Volume Control  
VR2 ..... VCO Adjustment
6. —+(B) Voltage Line.
7. The mark (▼) Shows test point. e.g.  
▼-Test point 1.

**CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM  
MODEL RF-433/©**



## CABINET AND ELECTRICAL PARTS LOCATION



Fig. 11

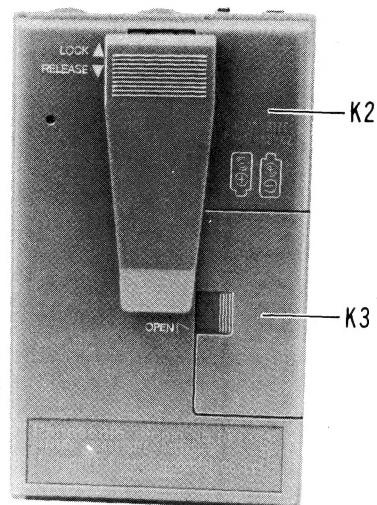


Fig. 12

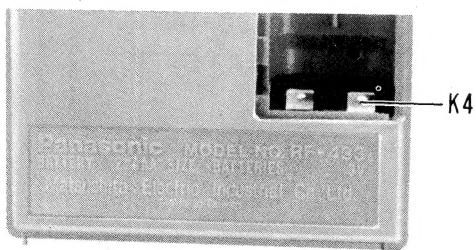


Fig. 13

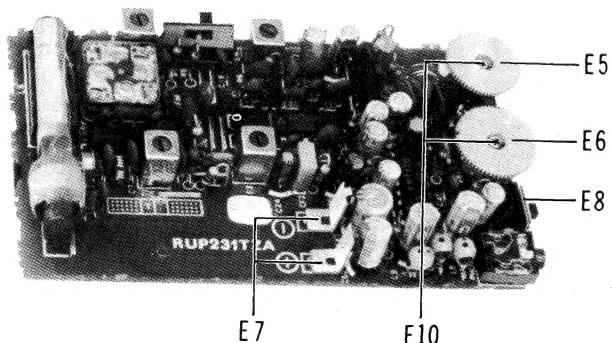


Fig. 14

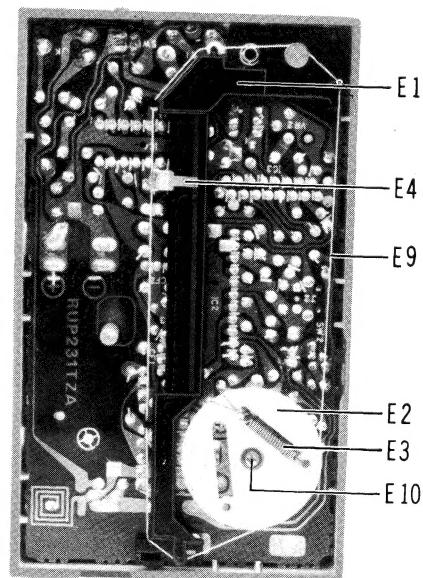


Fig. 15

**REPLACEMENT PARTS LIST ..... Model RF-433/© (TD84110161C1)**

Ref. No.	Parts No.	Part Name & Description	Per Set	Remarks
<b>INTEGRATED CIRCUIT TRANSISTOR AND DIODES</b>				
IC1	RVITA7358P	IC	1	
IC2	AN7226	IC	1	
IC3	RVIBA1360	IC	1	
IC4	ANT118	LED	1	
DI	LN222RP		1	T
<b>COILS AND TRANSFORMERS</b>				
L3	RLQ4Y15	Antenna Coil, FM	1	T
L4	RLQ4Y19	Oscillator Coil, FM	1	T
L5	RLQ2B87	Oscillator Coil, AM	1	T
L6	RF2L21	Antenna Coil, AM	1	T
T1	RL4AB156	IFT, FM	1	T
T2	RL4AB154	IFT, FM	1	T
T3	RL2B215	IFT, AM	1	T
<b>VARIABLE RESISTORS</b>				
VR1	RVV2H1C54	Variable Resistor 50KΩ (C)/Volume Control	1	T
VR2	RVNAC14B2	Variable Resistor, 10KΩ (B)	1	T
<b>VARIABLE CAPACITOR</b>				
VCL4	RCV4LCAVN	Tuning Capacitor W/Trimmer Capacitor (CT1-4)	1	T

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
<b>CERAMIC FILTERS</b>				
CF1	RVFSFE107MAZ	Ceramic Filter	1	T
CF2	RVTSFU455B	Ceramic Filter	1	T
<b>SWITCHES</b>				
S1	RSS2B54Z	Switch, Power	1	T
S2	RSS3B55Z	Switch, Band(FM ST/FM/AM)	1	T
<b>JACK</b>				
J1	RJJD26Z	Jack, Headphones	1	
<b>RESISTORS (Value is in OHMS)</b>				
R1	ERD25FJ820	82 $\frac{1}{4}$ W Carbon	1	S
R2	ERD25FJ3R3	3.3 $\frac{1}{4}$ W Carbon	1	S
R3	ERD25FJ560	56 $\frac{1}{4}$ W Carbon	1	S
R4	ERD25FJ181	180 $\frac{1}{4}$ W Carbon	1	S
R5	ERD25FJ121	120 $\frac{1}{4}$ W Carbon	1	S
R6	ERD25FJ103	10K $\frac{1}{4}$ W Carbon	1	S
R7	ERD25FJ100	10 $\frac{1}{4}$ W Carbon	1	S
R8	ERD25FJ272	2.7K $\frac{1}{4}$ W Carbon	1	S
R10	ERD25FJ222	2.2K $\frac{1}{4}$ W Carbon	1	S
R11, 12	ERD25FJ681	680 $\frac{1}{4}$ W Carbon	2	S
R14	ERD25FJ103	10K $\frac{1}{4}$ W Carbon	1	S
R15	ERD25FJ561	560 $\frac{1}{4}$ W Carbon	1	S
R16	ERD25FJ682	6.8K $\frac{1}{4}$ W Carbon	1	S
<b>CAPACITORS (Value is in MICRO FARADS except P.P = PICO FARADS)</b>				
C1	ECCD1H101K	100P 50V Ceramic	1	
C2	ECCD1H390KC	39P 50V Ceramic	1	
C3	ECCD1H600CC	6P 50V Ceramic	1	
C4	ECCD1H102MD	0.001 50V Ceramic	1	
C5	ECCD1H050CC	5P 50V Ceramic	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO	Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO
<b>ELECTRICAL PARTS</b>									
C6	ECCDIH180KC	18P 50V Ceramic	1		E1	RZAF433MKT	Dial Chassie ASSY	1	T
C7	ECKDIH103MD	0.01 50V Ceramic	1		E2	RDD205TZ	Drum, Dial	1	T
C8	ECFVD223MD	0.022 25V Semi-conductor	1		E3	RDS206TZ	Spring, Drum	1	T
C9	ECCDIK220KC	22P 50 Ceramic	1		E4	RDP219TZ	Pointer, Dial	1	T
C10	ECFVD473MD	0.047 25V Semi-conductor	1		E5	RBT209TZ	Knob, Tuning	1	T
C11	ECCDIH150KC	15P 50V Ceramic	1		E6	RB208YZ	Knob, Volume	1	T
C12	ECCDIK100KC	10P 50V Ceramic	1		E7	RJC214TZ	Terminal	2	T
C13	ECKDIH471KB	470P 50V Ceramic	1		E8	RGC206TZ	Ornament	1	T
C16	ECCDIH70DC	7P 50V Ceramic	1		E9	RDZ03Y	Cord, Dial	1	T
C17	ECCDIH680K	68P 50V Ceramic	1		E10	XSN17+4	Screw	3	
C18, 19	ECFVD223MD	0.022 25V Semi-conductor	2		<b>ACCESSORIES</b>				
C20	ECCDIH070DC	7P 50V Ceramic	1		A1	RD9245MKT	Headphones	1	
C21	ECKDIH102MD	0.001 50V Ceramic	1		A2	RK11203TZ	Belt Clipper	1	
C22	ECFVD473MD	0.047 25V Semi-conductor	1		A3	ME-139A	Sponge	1	
C23	ECKDIH681KB	680P 50V Ceramic	1		<b>PACKING MATERIALS</b>				
C24	ECEA1HS100	10 50V Electrolytic	1		P1	RPK264TZ	Gift Box (For U.S.A.)	1	
C25	ECKDIH471KB	470P 50V Ceramic	1		P1	RPK268TZ	Gift Box (For CANADA)	1	
C26	ECEA1LAS101	100 10V Electrolytic	1		P2	RPP245TZ	Polyethylene Cover	1	
C27	ECKDIH103ZJF	0.01 50V Ceramic	1		P3	RPN1182TZ	Pad	1	
C29	ECEA502ZJF	2.2 50V Electrolytic	1		<b>PRINTED MATERIAL</b>				
C30	ECEA25ZAR7	4.7 25V Electrolytic	1		Y1	RQX392TZ	Instruction Book (For Canada)	1	
C31, 32	ECFVD103MD	0.01 25V Semi-conductor	2						
C33	ECQSD51021Z	0.001 50V Polyester	1						
C34	ECFVD223MD	0.022 25V Semi-conductor	1						
C35	ECEA502ZJF	2.2 50V Electrolytic	1						
C36	ECEA502ZJF	0.047 25V Semi-conductor	2						
C37, 38	ECFVD473MD	0.047 25V Semi-conductor	1						
C41	ECEA1CS330	33 16V Electrolytic	1						
C42	ECCDIH680K	68P 50V Ceramic	1						
C43	ECEA1LAS470	47 10V Electrolytic	1						
C44	ECEA1CS330	33 33V Electrolytic	1						
C45	ECCDIH680K	68P 50 Ceramic	1						
C46	ECEA1LAS470	47 10V Electrolytic	1						
C47	ECEA1LAS221	220 10V Electrolytic	1						
C48, 49, 52	ECEA1LAS101	100 10V Electrolytic	3						
<b>CABINET PARTS</b>									
K1	RKM220TZ	Front Cabinet	1		K2	RKF221TZ	Front Cabinet	1	T
K3	RKK207TZ	Rear Cabinet	1		K4	RJC215TZ	Battery Cover	1	T
		Terminal	1					1	T

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO
<b>CABINET PARTS</b>				
K1	RKM220TZ	Front Cabinet	1	
K2	RKF221TZ	Front Cabinet	1	
K3	RKK207TZ	Rear Cabinet	1	
K4	RJC215TZ	Battery Cover	1	
		Terminal	1	T